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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/788,159	02/16/2001	James T. Gleeson	KSU.P.0206	4289

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EXAMINER	
NALVEN, ANDREW L	
ART UNIT	**PAPER NUMBER**
2134	3

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/788,159	GLEESON, JAMES T.	
	Examiner	Art Unit	
	Andrew L Nalven	2134	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 February 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-12 are pending.

2. IDS submitted 2 August 2001 has been received and considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al US Patent No. 5,394,256 in view of Borza et al US Patent No. 6,215,874 and Dennin et al "Patterns of electroconvection in nematic liquid crystal." Yamada teaches the use of encapsulated liquid crystals and Hoffman teaches a random number generator.

5. With regards to claims 1 and 7, Yamada teaches the providing of a liquid crystal cell containing a liquid crystal material between substrates (Yamada, column 8 lines 31-42 and Figure 2), applying a potential difference across the electrodes (Yamada, column 10 lines 3-6, voltage applied), and the measuring of at least one physical property of the liquid crystal material to generate a plurality of reading measurements (Yamada, column 10 lines 17-28, light transmission). Yamada fails to teach the setting of bits based on the plurality of reading measurements to generate a sequence of

random numbers. Borza teaches the setting of bits based on a plurality of reading measurements to generate a sequence of random numbers (Borza, column 2 lines 45-57, column 8 lines 1-2) and Dennin teaches the readings being random (Dennin, page 638, column 1 paragraph 2 through continuation on column 2). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to utilize Borza's bit setting method and Dennin's generation of randomness with liquid crystal cells with Yamada's liquid crystal system because it offers the advantage of providing an unpredictable random number with no statistical pattern (Dennin, page 649, column 1 paragraph 2) that is useful for encryption and key generation (Borza, column 2 lines 5-15).

6. With regards to claim 2, Yamada as modified teaches the at least one physical property being selected from the group consisting of light absorbed by the liquid crystal, light transmitted by the liquid crystal, light reflected by the liquid crystal, and the amount of electric current traversing the liquid crystal (Yamada, column 10 lines 13-28, light transmission).

7. With regards to claims 3 and 12, Yamada as modified teaches first measuring at least one of the physical properties to generate a baseline measurement (Borza, column 8 lines 38-39, threshold value), subsequently measuring at least one physical property to generate a plurality of reading measurements (Borza, column 8 lines 34-38, signal values), and setting bits based on the comparison of the baseline measurement to the plurality of reading measurements (Borza, column 8 lines 38-39, result).

8. With regards to claims 4 and 9, Yamada as modified teaches the liquid crystal material comprising a nematic liquid crystal (Yamada, column 3 lines 19-23).

9. With regards to claim 5, Yamada as modified teaches the applying step causing the liquid crystal material to undergo a chaotic turbulent flow (Dennin, page 642, column 2 paragraph 4, extended chaotic, page 649 column 1 paragraph 2).

10. With regards to claim 6, Yamada as modified teaches a plurality of light sources directing light towards a liquid crystal cell and a like plurality of light detectors to measure properties of the light after impinging the liquid crystal cell (Page 639, column 2 paragraphs 2 and 3, light source and lenses/ccd).

11. With regards to claims 8 and 10-11, Yamada fails to teach a computer program connected to the interface wherein the program processes digitized measurements into random numbers for use in encrypting data. Borza teaches a computer program connected to the interface wherein the program processes digitized measurements into random numbers for use in encrypting data (Borza, column 10 lines 4-10, column 2 lines 5-15) and Dennin teaches the randomness of the measurements (Dennin, page 638, column 1 paragraph 2 through continuation on column 2). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to utilize Borza's bit setting method and Dennin's generation of randomness with liquid crystal cells with Yamada's liquid crystal system because it offers the advantage of providing an unpredictable random number with no statistical pattern (Dennin, page 649, column 1 paragraph 2) that is useful for encryption and key generation (Borza, column 2 lines 5-15).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Tsuda et al US Patent No. 5,896,163 teaches a laser liquid crystal marker and method for judging deterioration of liquid crystal.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew L Nalven whose telephone number is 703 305 8407. The examiner can normally be reached on Monday - Thursday 8-6, Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Morse can be reached on 703 308 4789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GREGORY MORSE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Andrew Nalven